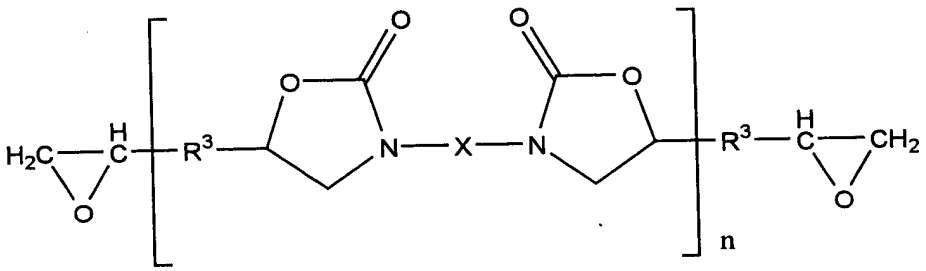
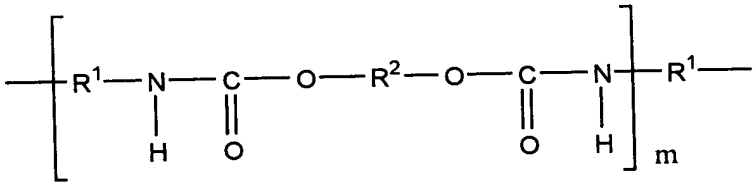
WHAT IS CLAIMED IS:

1. An oxazolidone ring-containing epoxy resin having a structure of the formula:



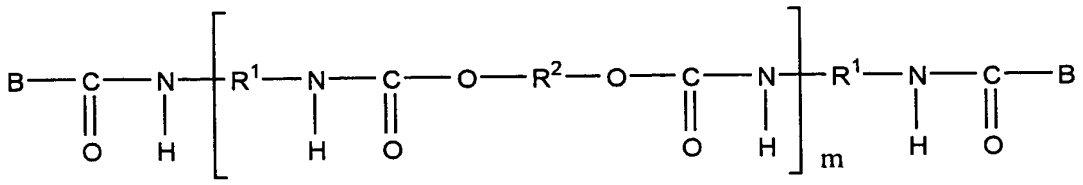
wherein R^3 represents a residue excluding epoxy groups of diepoxide, X represents a residue excluding isocyanate groups of polyurethane diisocyanate, and n represents an integer of 1 to 5; and wherein X has a structure of the formula:



wherein R^1 represents a residue excluding isocyanate groups of diisocyanate, R^2 represents a residue excluding hydroxyl groups of diol, and m represents an integer of 2 to 10.

2. A process for preparing the oxazolidone ring-containing epoxy resin of claim 1, comprising the steps of:

obtaining a blocked polyurethane diisocyanate represented by the formula:



wherein R^1 represents a residue excluding isocyanate groups of diisocyanate, R^2 represents a residue excluding hydroxyl groups of diol, B represents a residue of a blocking agent, and m represents an integer of 2 to 10, by reacting diisocyanate, diol, and a blocking agent; and

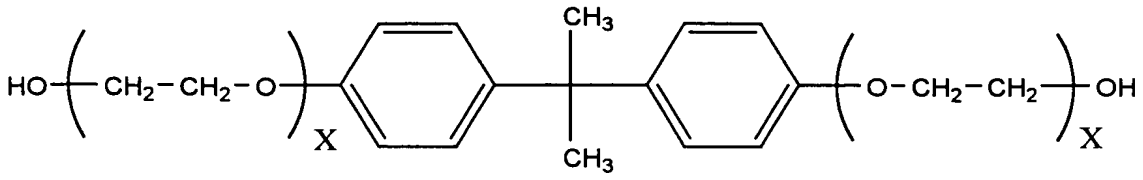
allowing the blocked polyurethane diisocyanate to react with diepoxide.

3. The process according to claim 2, wherein the diisocyanate is aromatic diisocyanate.

4. The process according to claim 3, wherein the diisocyanate is selected from the group consisting of 4,4'-diphenylmethane diisocyanate (MDI), tolylene diisocyanate (TDI), and xylylene diisocyanate (XDI).

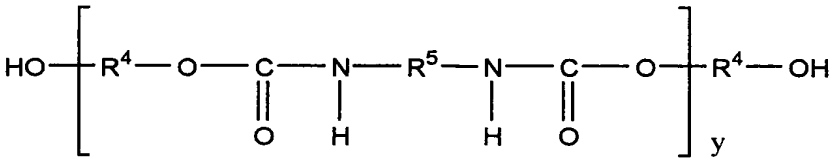
5. The process according to claim 2, wherein the diol is selected from the group consisting of polyether diol, polycaprolactone diol, polycarbonate diol, and polyurethane diol, each having a molecular weight of 300 to 9000.

6. The process according to claim 5, wherein the polyether diol is an ethylene oxide adduct of bisphenol A having a structure of the formula:



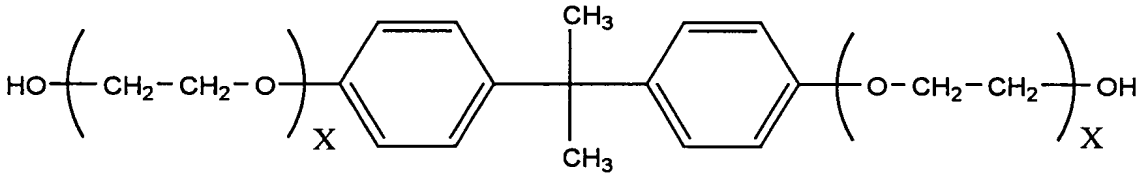
wherein x represents an integer of 1 to 10.

7. The process according to claim 5, wherein the polyurethane diol has a structure of the formula:



wherein R^4 represents a residue excluding hydroxyl groups of diol, provided that the diol is different from polyurethane diol, R^5 represents a residue excluding isocyanate groups of aliphatic polyisocyanate, and y represents an integer of 1 to 10.

8. The process according to claim 7, wherein R^4 is a residue excluding hydroxyl groups of an ethylene oxide adduct of bisphenol A having a structure of the formula:



wherein x represents an integer of 1 to 10.

9. The process according to claim 2, wherein the diepoxide is selected from the group consisting of a polyphenol diglycidyl ether type epoxy resin which is a reaction product of a polycyclic polyphenol compound with

epichlorohydrin, polyglycidyl ether of polyhydric alcohol, and polyglycidyl ester of aliphatic, alicyclic or aromatic polycarboxylic acid.

10. An oxazolidone ring-containing aqueous resin prepared by the process comprising the steps of:

reacting the oxazolidone ring-containing epoxy resin (a) of claim 1, and at least one first active hydrogen compound (b) selected from the group consisting of monoalcohol, diol, monocarboxylic acid, and dicarboxylic acid to partially ring-open the epoxy groups present in the oxazolidone ring-containing epoxy resin (a); and

allowing the resulting product to react with the second active hydrogen compound having an ionic group (c) to ring-open the rest of the epoxy groups.

11. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the first active hydrogen compound (b) is polyether polyol, polyester polyol, or bisphenols and their derivatives.

12. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the first active hydrogen compound (b) is aliphatic primary alcohol, or phenols and their derivatives.

13. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the first active hydrogen compound (b) is aliphatic or aromatic dicarboxylic acid.

14. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the first active hydrogen compound (b) is aliphatic or aromatic monocarboxylic acid.

15. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the second active hydrogen compound (c) is an acid salt of primary amine, secondary amine, or tertiary amine.

16. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the second active hydrogen compound (c) is a mixture of sulfide and acid.

17. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the second active hydrogen compound (c) is aliphatic, or aromatic polycarboxylic acid.

18. The oxazolidone ring-containing aqueous resin according to claim 10, wherein the oxazolidone ring-containing epoxy resin (a) is contained in an amount of from 35 to 95% by weight based on solid.

19. An aqueous coating composition which comprises an aqueous medium, a neutralizing agent which is dissolved in the aqueous medium, the oxazolidone ring-containing epoxy resin according to claim 10 and a crosslinking agent which are dispersed in the aqueous medium.